CLAIM AMENDMENTS

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims regarding the present application. In reading this, text added by the amendment is underlined, and canceled text appears in ~~strikethrough~~.

1. (Original) A method of storing digital data within a Flash Memory System comprising the steps:
   a. mapping a non-volatile memory medium within the Flash Memory System into a plurality of independently addressable, independently programmable and independently erasable memory blocks including a plurality of Dedicated Data Blocks and a plurality of Dedicated Overhead Blocks comprising a first Dedicated Overhead Block and a second Dedicated Overhead Block;
   b. mapping each of the plurality of Dedicated Overhead Blocks into a plurality of pages, wherein the plurality of pages within each Dedicated Overhead Block are addressed according to an identical set of consecutive page addresses;
   c. mapping each of the plurality of Overhead Pages into a plurality of Overhead Segments, wherein the plurality of Overhead Segments within each page are addressed according to an identical set of consecutive segment addresses, each Overhead Segment comprising a plurality of registers including a Physical Address Register and a flag field; and
   d. correlating the plurality of consecutive Overhead Page addresses within the first Dedicated Overhead Block to a respective plurality of consecutive Virtual Logical Block Addresses including a first Logical Block Address defining a first Logical Block of User Data correlated to a first Overhead Page address defining a first Overhead Page.

2. (Currently amended) The method according to Claim 1 further comprising the steps:
   a. receiving from a host a first set of User Data defined according to the first Virtual Logical Block Address;
   b. storing the first set of User Data in a first Dedicated Data Block defined according to a first Virtual Physical Block Address;

c. identifying a first available segment within the first page, an available Overhead Segment comprising an Overhead Segment that is unused, non-defective, and not obsolete, and wherein the first available segment is defined by a lowest segment address of available segments comprising the first page; and

d. storing an address of the first Dedicated Data Block in the Physical Address Register of the first available Overhead Segment.

3. (Original) The method according to claim 1 wherein each of the Overhead Segments further comprises an error correction code.

4. (Original) The method according to Claim 1 further comprising the step of consolidating all current Overhead Segments within the first Dedicated Overhead Block into a second Dedicated Overhead Block, a current Overhead Segment comprising an Overhead Segment that is used, non-defective, and not obsolete.

5. (Previously Presented) The method according to Claim 4 wherein the step of consolidating the first Dedicated Overhead Block into a second Dedicated Overhead Block further comprises the steps:

a. moving data stored within a current Overhead Segment within the first Overhead Page of the first Dedicated Overhead Block to a replacement Overhead Segment within a second Overhead Page within the second Dedicated Overhead Block, the replacement Overhead Segment being a lowest addressable segment within the second Overhead Page, the second Overhead Page being defined by an identical page address as an address defining the first Overhead Page; and

b. erasing the first Dedicated Overhead Block.

6. (Original) The method according to Claim 1 wherein the step of correlating the plurality of consecutive page addresses to a respective plurality of consecutive Virtual Logical Block Addresses is performed through a RAM space manager.

7. (Original) The method according to claim 6 further comprising the steps:

a. storing a logical address within a non-volatile correlation register within the Flash Memory System; and

b. loading a physical address into a correlation register of the RAM space manager upon power up.

8. (Original) The method according to Claim 2 wherein the flag field within each Overhead Segment further includes a used flag, an obsolete flag, and a defective flag.

9. (Original) The method according to Claim 8 wherein the step of identifying the first available segment further comprises the step of examining select flags within select Overhead Segments within the first page.

10. (Original) The method according to Claim 9 wherein the step of storing an address of the first Dedicated Data Block in the Physical Address Register of the first available Overhead Segment further comprises the step of setting the used flag within the first available Overhead Segment to a second position, thereby indicating that overhead data has been stored therein.

11. (Original) The method according to Claim 10 further wherein the step of storing an address of the first Dedicated Data Block in the Physical Address Register of the first available Overhead Segment further comprises the step of setting the obsolete flag in a last used Overhead Segment to a second position, thereby indicating the last used segment is obsolete; wherein the address of the first available segment consecutively follows an address defining the last used Overhead Segment within the first page.

12. (Original) The method according to claim 3 wherein the step of consolidation is preceded by a step of writing overhead data into a highest addressable overhead segment of a page within the first dedicated overhead block.

13. (Original) The method according to claim 1 further comprising the steps:
a. marking as defective a dedicated overhead block; and
b. re-designating a dedicated data block as a dedicated overhead block.

14. (Canceled)

15. (Currently amended) ~~The method according to Claim 14 further~~ A method of data storage within a Flash Memory comprising the steps:

a. mapping a non-volatile memory medium within the Flash Memory System into a plurality of independently addressable, independently programmable and independently erasable memory blocks including a plurality of Dedicated Data Blocks and a plurality of Dedicated Overhead Blocks comprising a first Dedicated Overhead Block and a second Dedicated Overhead Block;

b. mapping each of the plurality of Dedicated Overhead Blocks into a plurality of consecutively addressed Overhead Segments, wherein the plurality of segments within each Dedicated Overhead Block are addressed according to an identical set of distinct segment addresses, each segment comprising a Physical Address Register and a Flag Field;

c. correlating the first Dedicated Overhead Block to a first group of Virtual Logical Block Addresses including a first Virtual Logical Block Address;

[[a]]d. receiving from a host a first set of User Data defined according to a first Virtual Logical Block Address;

[[b]]e. identifying a first available Overhead Segment within the first Dedicated Overhead Block, the first available Overhead Segment comprising a lowest addressable available Overhead Segment within the first Dedicated Overhead Block, an available Overhead Segment comprising an Overhead Segment that is unused, non-defective, and not obsolete;

[[c]]f. storing the first set of User Data in a first Dedicated Data Block defined according to a first Virtual Physical Block Address; and

[[d]]g. storing an address of the first Dedicated Data Block in the Physical Address Register of the first available Overhead Segment[[.]],

wherein user data and overhead data are segregated in separate memory blocks, such that the user data are stored only in the plurality of dedicated data blocks and the overhead data are separately stored only in the plurality of dedicated overhead blocks.

16. (Original) The method according to Claim 15 further comprising the step of consolidating all current Overhead Segments within the first Dedicated Overhead Block into

15. (Currently amended) ~~The method according to Claim 14 further~~ A method of data storage within a Flash Memory comprising the steps:

a. mapping a non-volatile memory medium within the Flash Memory System into a plurality of independently addressable, independently programmable and independently erasable memory blocks including a plurality of Dedicated Data Blocks and a plurality of Dedicated Overhead Blocks comprising a first Dedicated Overhead Block and a second Dedicated Overhead Block;

b. mapping each of the plurality of Dedicated Overhead Blocks into a plurality of consecutively addressed Overhead Segments, wherein the plurality of segments within each Dedicated Overhead Block are addressed according to an identical set of distinct segment addresses, each segment comprising a Physical Address Register and a Flag Field;

c. correlating the first Dedicated Overhead Block to a first group of Virtual Logical Block Addresses including a first Virtual Logical Block Address;

[[a]]d. receiving from a host a first set of User Data defined according to a first Virtual Logical Block Address;

[[b]]e. identifying a first available Overhead Segment within the first Dedicated Overhead Block, the first available Overhead Segment comprising a lowest addressable available Overhead Segment within the first Dedicated Overhead Block, an available Overhead Segment comprising an Overhead Segment that is unused, non-defective, and not obsolete;

[[c]]f. storing the first set of User Data in a first Dedicated Data Block defined according to a first Virtual Physical Block Address; and

[[d]]g. storing an address of the first Dedicated Data Block in the Physical Address Register of the first available Overhead Segment[[.]],

wherein user data and overhead data are segregated in separate memory blocks, such that the user data are stored only in the plurality of dedicated data blocks and the overhead data are separately stored only in the plurality of dedicated overhead blocks.

16. (Original) The method according to Claim 15 further comprising the step of consolidating all current Overhead Segments within the first Dedicated Overhead Block into consecutive Overhead Segments within the second Dedicated Overhead Block, a current

Overhead Segment comprising an Overhead Segment that is used, non-defective, and not obsolete.

17. (Original) The method according to Claim 16 wherein the step of consolidating the first Dedicated Overhead Block into a second Dedicated Overhead Block comprises the steps:
    a. moving data stored within a first current Overhead Segment in the first Dedicated Overhead Block into a lowest addressable available Overhead Segment within the second Dedicated Overhead Block, and
    b. erasing the first Dedicated Overhead Block.

18. (Original) The method according to claim 17 wherein the step of consolidation is preceded by a step of writing overhead data into a last addressable segment of the first dedicated overhead block.

19. (Canceled)

20. (Canceled)

21. (Original) The method according to Claim 15 wherein the flag field within each Overhead Segment further includes a used flag, an obsolete flag, and a defective flag.

22. (Original) The method according to Claim 15 wherein the step of identifying the first available Overhead Segment further comprises the step of examining select flags within select Overhead Segments within the first Dedicated Overhead Block.

23. (Original) The method according to Claim 21 further comprising the step of setting the used flag within the next available Overhead Segment to a second position, thereby indicating that overhead data has been stored in the next available segment.

24. (Original) The method according to Claim 17 wherein the step of moving data stored in a first current overhead segment into a first available overhead segment further comprises the steps:

29. (Previously Presented) The method according to Claim 27 wherein the step of correlating the plurality of consecutively addressable Overhead Segments within the fixed overhead field of the Dedicated Overhead Block to a first group of consecutively addressable Virtual Logical Block Addresses is performed through a RAM Space Manager.

30. (Original) The method according to Claim 29 further comprising the steps:
    a. storing a logical address within a non-volatile correlation register within the Flash Memory System; and
    b. loading a physical address into a correlation register of the RAM Space Manager upon power up, thereby correlating a logical address with a physical address in the RAM Space Manager.

31. (Previously Presented) The method according to Claim 27 further comprising the steps:
    a. receiving from a host a first set of User Data defined according to the first Virtual Logical Block Address;
    b. storing the first set of User Data in a first Dedicated Data Block defined according to a first Virtual Physical Block Address; and
    c. storing overhead data corresponding to the first Virtual Logical Block Address in the first Overhead Segment within the first Dedicated Overhead Block.

32. (Original) The method according to Claim 31 wherein the step of storing overhead data in the first Overhead Segment comprises the steps:
    a. identifying the first fixed segment within the fixed overhead field of the first Dedicated Overhead Block;
    b. determining if the first fixed segment is available;
    c. storing the overhead data supporting the first Virtual Logical Block Address in the first fixed segment when the first fixed segment is available; and
    d. storing the overhead data corresponding to the first Virtual Logical Block Address in a first random Overhead Segment when the first fixed segment is not available, the first random segment comprising a lowest addressable unused and non-defective Overhead Segment within the random overhead field of the first Dedicated Overhead Block.

33. (Original) The method according to Claim 31 wherein the step of determining that the first fixed segment is available comprises the step of examining flags within the first fixed segment.

34. (Original) The method according to claim 31 further comprising the steps:
   a. mapping the random overhead field of each Dedicated Overhead Block into a plurality of pages, each page comprising a plurality of segments;
   b. designating a lowest addressable segment in each page within the random overhead field as a Status Segment; and
   c. mapping each status segment into a plurality of registers to function as an update map.

35. (Original) The method according to Claim 31 wherein the step of storing overhead data corresponding to the first Virtual Logical Block Address in the first random Overhead Segment further comprises the steps:
   a. locating a last previous segment used for storing overhead data supporting the first Virtual Logical Block Address;
   b. setting an obsolete-flag corresponding to the last previous segment to a second value, indicating that overhead data within the last previous segment is now obsolete; and
   c. setting an used-flag in the first random Overhead Segment to a second value, indicating that overhead data is now stored in the first random Overhead Segment.

36. (Original) The method according to Claim 34 wherein the update map contains one register corresponding to each segment within the fixed overhead field of the first Dedicated Overhead Block.

37. (Original) The method according to Claim 27 further comprising the step of consolidating current overhead segments within the first Dedicated Overhead Block into the second Dedicated Overhead Block when the first Dedicated Overhead Block becomes full.

38. (Previously Presented) The method according to claim 37 wherein the step of consolidating current overhead segments comprises the steps:

a. correlating a second Overhead Segment within the fixed overhead field of the second Dedicated Overhead Block to the first Virtual Logical Block Address; and

b. copying data within the first overhead segment into the second overhead segment.

39. (Original) A method of storing digital data within a Flash Memory System comprising the steps:

a. mapping a non-volatile memory medium within the Flash Memory System into a plurality of separately addressable, separately programmable and separately erasable memory blocks comprising a plurality of Dedicated Data Blocks and a plurality of Dedicated Overhead Blocks, the plurality of Dedicated Overhead Blocks including a first Dedicated Overhead Block and a second Dedicated Overhead Block;

b. mapping each of the plurality of Dedicated Overhead Blocks into plurality of Super Overhead Fields, including a first Super Overhead Field within the first Dedicated Overhead Block;

c. mapping each of the plurality of Super Overhead Fields into an identical set of consecutively addressable Overhead Segments, each of the plurality of Overhead Segments comprising a plurality of registers including a Physical Address Register;

d. correlating a first Super Virtual Logical Block Address defined by consecutive Virtual Logical Block Addresses to the first Dedicated Overhead Block; and

e. correlating a first Virtual Logical Block Address within the first Super Virtual Logical Block Address to a first Overhead Segment Address within the first Dedicated Overhead Block.

40. (Original) The method according to Claim 39 further comprising the steps:

a. marking as defective a dedicated Overhead Block; and

b. re-designating a Dedicated Data Block as a Dedicated Overhead Block.

41. (Original) The method according to Claim 39 wherein the step of correlating a first Super Virtual Logical Block Address to the first Dedicated Overhead Block is performed through a RAM Space Manager.

42. (Original) The method according to Claim 41 further comprising the steps:
    a. storing a logical address within a non-volatile correlation register within the Flash Memory System; and
    b. loading a physical address into a correlation register of the RAM Space Manager upon power up, thereby correlating a logical address with a physical address in the RAM Space Manager.

43. (Original) The method according to Claim 42 wherein the non-volatile correlation register is within an extension field of a Super Overhead Field of a Dedicated Overhead Block.

44. (Previously Presented) The method according to Claim 39 further comprising the steps:
    a. receiving from a host a first set of User Data defined according to the first Virtual Logical Block Address;
    b. storing the first set of User Data in a first Dedicated Data Block defined according to a first Virtual Physical Block Address;
    c. storing overhead data corresponding to the first Virtual Logical Block Address in a first Overhead Segment defined by the first Overhead Segment Address within the first Super Overhead Field.

45. (Original) The method according to Claim 44 wherein the step of storing overhead data is preceded by the step of incrementing from a previous Super Overhead Field within the first Dedicated Overhead Block to the first Super Overhead Field.

46. (Original) The method according to Claim 44 wherein the step of storing overhead data further comprises the step of setting an used-flag within the first Overhead Segment to a second position indicating that overhead data is stored within the first Overhead Segment.

47. (Original) The method according to Claim 46 wherein the step of storing overhead data further comprises the steps:
    a. locating a last previous segment within the first Dedicated Overhead Block used for storing overhead data supporting the first Virtual Logical Block Address; and
    b. setting an obsolete-flag within the last previous segment to a second value, indicating that overhead data within the last previous segment is now obsolete.

48. (Original) The method according to Claim 39 further comprising the step of consolidating current overhead segments within the first Dedicated Overhead Block into the second Dedicated Overhead Block when overhead data has been stored in a final Super Overhead Field within the first Dedicated Overhead Block.

49. (Original) The method according to claim 48 wherein the step of consolidating current overhead segments comprises the steps:

a. identifying a first current Overhead Segment defined according to the first Overhead Segment Address within the first Dedicated Overhead Block ; and

b. copying data within the first current Overhead Segment into a second overhead segment defined according to the first Overhead Segment Address within the first Super Overhead Field of the second Dedicated Overhead Block.

50. (Canceled)

51. (Canceled)

52. (Canceled)

53. (Canceled)

54. (Canceled)

55. (Currently Amended) ~~The Flash memory Device according to Claim 54 A flash memory device for storing~~ User Data comprising a plurality of separate, independently addressable, independently programmable and independently erasable non-volatile Physical Memory Blocks distinguishably defined by a plurality of Physical Block Addresses including:

a. a plurality of dedicated data Blocks for storing User Data only; and

b. a plurality of consecutively addressed Dedicated Overhead Blocks for storing Overhead Data only including a first Dedicated Overhead Block and a second Dedicated Overhead Block,

wherein the plurality of dedicated data blocks is segregated from the plurality of dedicated overhead blocks, wherein each Dedicated Overhead Block is identically comprised of a plurality of separately addressable Overhead Pages, each block following an identical sequence of page addresses, wherein each Overhead Page is comprised of a plurality of independently addressable and independently programmable segments, including a plurality of Overhead Segments, wherein the plurality of independent Overhead Segments are used for storing Overhead Data, each Overhead Segment supporting one Virtual Logical Block of User Data, each Overhead Segment comprising:

a. physical Address Register for storing a Physical Address for locating corresponding User Data; and

b. a flag field,

wherein a first group of Virtual Logical Block Addresses including a first VLBA are assigned to the first Dedicated Overhead Block, such that overhead data generated in support of the first VLBA will be stored in an Overhead Segment within the first Dedicated Overhead Block, wherein sequential VLBA's within the first group of VLBA's are respectively correlated to sequentially addressed Overhead Page Addresses within the first Dedicated Overhead Block, including a first Virtual Logical Block Address correlated to a first Overhead Page within the first Dedicated Overhead Block, such that Overhead Data supporting the first Virtual Logical Block Address will be stored in an Overhead Segment within the first Overhead Page.

56. (Currently Amended) ~~The Flash Memory Device according to Claim 54~~ User Data comprising a plurality of separate, independently addressable, independently programmable and independently erasable non-volatile Physical Memory Blocks distinguishably defined by a plurality of Physical Block Addresses including:

a. a plurality of dedicated data Blocks for storing User Data only; and

b. a plurality of consecutively addressed Dedicated Overhead Blocks for storing Overhead Data only including a first Dedicated Overhead Block and a second Dedicated Overhead Block,

wherein the plurality of dedicated data blocks is segregated from the plurality of dedicated overhead blocks, wherein each Dedicated Overhead Block is identically comprised of a plurality of separately addressable Overhead Pages, each block following an identical sequence of page addresses, wherein each Overhead Page is comprised of a plurality of

independently addressable and independently programmable segments, including a plurality of Overhead Segments, wherein the plurality of independent Overhead Segments are used for storing Overhead Data, each Overhead Segment supporting one Virtual Logical Block of User Data, each Overhead Segment comprising:

a. physical Address Register for storing a Physical Address for locating corresponding User Data; and

b. a flag field,

wherein a first group of Virtual Logical Block Addresses including a first VLBA are assigned to the first Dedicated Overhead Block, such that overhead data generated in support of the first VLBA will be stored in an Overhead Segment within the first Dedicated Overhead Block, wherein each of the plurality of Dedicated Overhead Blocks further comprise of a fixed Overhead Field and a Random Overhead Field, the fixed Overhead Field being comprised of a plurality of consecutively addressed Overhead Pages, and the Random Overhead Field being comprised of a plurality of consecutively addressed Overhead Pages.

57. (Original) The Flash Memory Device according to Claim 56 wherein consecutively addressed segments comprising the consecutively addressable Overhead Pages within the Fixed Overhead Field of the first Dedicated Overhead Block are respectively correlated to sequentially addressed Virtual Logical Block Addresses.

58. (Currently Amended) The flash memory device according to Claim 57 wherein the plurality of consecutively addressed segments comprising the consecutively addressed Overhead Pages within a first Overhead Page within the Random Overhead Field of the First Dedicated Overhead Block comprise a Status Segment and a plurality of Overhead Segments, the Status Segment defined according to a lowest segment address among the plurality of segments within the first Overhead Page.

59. (Original) ~~The Flash Memory Device according to Claim 54~~ User Data comprising a plurality of separate, independently addressable, independently programmable and independently erasable non-volatile Physical Memory Blocks distinguishably defined by a plurality of Physical Block Addresses including:

a. a plurality of dedicated data Blocks for storing User Data only; and

b. a plurality of consecutively addressed Dedicated Overhead Blocks for storing Overhead Data only including a first Dedicated Overhead Block and a second Dedicated Overhead Block,

wherein the plurality of dedicated data blocks is segregated from the plurality of dedicated overhead blocks, wherein each Dedicated Overhead Block is identically comprised of a plurality of separately addressable Overhead Pages, each block following an identical sequence of page addresses, wherein each Overhead Page is comprised of a plurality of independently addressable and independently programmable segments, including a plurality of Overhead Segments, wherein the plurality of independent Overhead Segments are used for storing Overhead Data, each Overhead Segment supporting one Virtual Logical Block of User Data, each Overhead Segment comprising:

a. physical Address Register for storing a Physical Address for locating corresponding User Data; and

b. a flag field,

wherein a first group of Virtual Logical Block Addresses including a first VLBA are assigned to the first Dedicated Overhead Block, such that overhead data generated in support of the first VLBA will be stored in an Overhead Segment within the first Dedicated Overhead Block, wherein each Dedicated Overhead Block is further comprised of a plurality of Super Overhead Fields including a first Super Overhead Field, a Super Overhead Field comprised of a whole number of pages, each Super Overhead Field within the first Dedicated Overhead Block comprised of an identical number of pages, wherein consecutive Overhead Segments within first Super Overhead Region are respectively assigned to consecutively addressed Virtual Logical Block Addresses which comprise a first SuperBlock.

60. (Canceled)

61. (Canceled)

62. (Canceled)

63. (Canceled)

64. (Canceled)

65. (Canceled)

66. (Canceled)